| Crop | Name of variety | Year of release | Area | Character |
|---|---|---|---|---|
| | TAG-24 | 1991 | Maharashtra | 50% higher yield, bunch (Kharif Summer). |
| | TAG-22 | 1992 | Bihar | 30% highet yield. Large seed, Bunch. (Kharif). |
| | TC-19A | 1994 | Maharashtra | 12% higher yield, Large seed, Bunch (Kharif, Summer). |
| | TG-26 | 1994 | Gujarat, Maharashtra, Madhya Pradesh | 39% higher yield, Bunch (Summer). |
| BLACKGRAM I.Urid) | TAU-I | 1985 | Maharashtra | 27% higher yield, large seed, early. |
| | TAU-2 | 1992 | Maharashtr. | 18% higher yield over TAU I. |
| | TPU-4 | 1992 | Maharashtra, Madhya Pradesh, Gujarat | 2?:% higher yield. |
| PiGEONPEA (Arliar) | TT-6 | 1983 | Central and Peninsular India | 15% higher yield, large seed, early (130—150 days). |
| | TAT-10 | 1985 | Maharashtra | Extra early (110—115 days). Large seed. |
| MUSTARD | TM-2 | 1987 | Assam | 35% higher yield, Black seed. |
| | TM-4 | 1987 | Assam | 20% higher yield, Yellow seed. |
| RICE | Hari | 1988 | Andhra PnsJesh | 20% higher yield. |
| JUTE | TKJ-40 | 1983 | Orissa | 13% higher yield. |

**Anupam Super Computer System**

2720. DR. SHRIKANT RAMCHANDRA JICHKAR: Will the PRIME MINISTER be pleased to state:

(a) whether the Super Computer System called Anumpam demonstrated earlier by BARC, has become successful;

(b) if so, to what use it is being put;

(c) whether there is any demand for it from other countries; and

(J) if so, what steps are being taken for the best use in the country?

THE MINISTER OF STATE OF THE MINISTRY OF PLANNING AND PROGRAMME IMPLEMENTATION AND MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI YOGINDER K. ALAGH): (a) Yes, Sir. The R&D work the Anupam Super Computer has ^ ui actively pursued for the last five tears. The Anupam Super Computer system developed in the beginning of 1992 was using 5 node computer systems in parallel processing mode giving a computing speed of 32 million fleasing point instructions per second (MFLOPS). Subsequently, the Anupam Super Computer systems were developed using 8, 16, 24, 32 and 64 node computer systems in parallel. The latest 64 node Anupam Super Computer has a speed of 400 MFOPS for actually executed programmes, with peak speed of 5800 MFLOPS, which is equivalent to the speed of Croy YMP class of Super Computer.

(a) The various configurations of Anupam Super Computer are installed at .Bhabha Atomic Research Centre, Mumbai, Institute of Physics, Bhubaneswar; Centre for Advanced Technology, Indore; Indira Gandhi Centre for Atomic Research, Balpakkam and Indian Institute of Technology,

Mumbai. These systems are primarily used for scientific computation requiring super computing capabilities in the following main areas—

(i) various structural analysis calculations and simulations studies in basic and applied sciences/technologies;

(ii) development of systems software for large parallel date base applications; and

(iii) parallelising of weather forecasting programme for medium range weather forecasting.

At Indian Institute of Technology, Mumbai, the Anupam Computer system is being used for solving computational fluid dynamics problems and for development of system software for large parallel data base applications. The Anupam Super Computer has also been used for parallelising the weather forecasting programs, namely T/80 Mode] and SSI analyse, wich are operational and Cray XMP/216 Supet Computer at the National centre for Medium Range Weather Forecasting, Department of Science & Technology New Delhi. It was observed that a 16 node Anupam System would be albe to execute both the weather forecasting codes at the same speed as the single processor Cray/XMP.

(c) At present there is no demand from abroad for the vailable Anupam Super Computer system which is based on INTEL 1860 microprocessor chips.

(d) many advanced courses on the use of the Anupam System for large computational jobs have been conducted at various institutes both within the country and abroad. Scientists of Bhabha Atomic Research Centre have participated actively in the workshops abroad and in India with a view to imparting practical training on parallel processing technology.

**Capabilities of Indian Nuclear Programme**

2721. SHRI SURINDER KUMAR SINGLA:
DR. SHRIKANT RAMCHANDRA JICHKAR:

Will the PRIME MINISTER be pleased to state:

(a) whether the Indian Nuclear Programme has developed technical capabilities in all segments of the nuclear fuel cycle;

(b) if so, what are the salient features;

(c) to what applied use these are being put; and

(d) what steps are being taken to make more advancements in this area?

THE MINISTER OF STATE OF THE MINISTRY OF PLANNING AND PROGRAMME IMPLEMENTATION AND MINISTER OF STATE OF T.HL-. MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI YOGINDfck K. ALAGII): (a) Yes. Sir India is one of she few countries in the world which has acqui.'cd comprehensive indigenous capability in all aspects of the nuclear fuel cycle. The nuclear fuel cycle consists of a chain of activities comprising survey and exploration of atomic minerals by Atomic Minerals Division; exploitation of the resources and production of uranium concentrate by Uranium Corporation of India Limited; fabrication of nuclear fuel required for nuclear reactors by the Nuclear Fuel Complex; the production of heavy water by the heavy Water Board; the construction and operation of nuclear power plants by the Nuclear Power Corporation of India Limited and reprocessing of spent fuel and safe disposal of atomic wastes by Bhabha Atomic Research Centre. AH these nuclear fuel cycle activities are packed up by an extensive R&D programme.

(b) Indian nuclear programme has evolved a three stage strategy to generate nuclear power using its moderate natural resources of uranium and vast resources